

Title (en)  
Method of forming connection hole

Title (de)  
Verfahren zum Herstellen eines Verbindungsloches

Title (fr)  
Méthode pour former un trou de connexion

Publication  
**EP 1608010 A2 20051221 (EN)**

Application  
**EP 05016009 A 19960528**

Priority  
• EP 96108467 A 19960528  
• JP 13031895 A 19950529  
• JP 2959996 A 19960216

Abstract (en)  
A method of forming a connection hole, which includes the steps of: laminating an etching stopper film made of a SiN based material and an interlayer insulating film made of a SiO<sub>x</sub> based material on a substrate in this order; forming an organic film pattern on the interlayer insulating film on the basis of a connection hole pattern; dry-etching the interlayer insulating film using the organic film pattern as a mask while keeping a selection ratio to the etching stopper film; a fourth step of removing a carbon based protective film which is deposited on an exposed surface of the etching stopper film by the dry etching, using an etching reactive system including an oxygen based chemical species; and a fifth step of completing a connection hole by selectively etching the etching stopper film. <IMAGE>

IPC 1-7  
**H01L 21/60**; **H01L 21/68**

IPC 8 full level  
**H05H 1/46** (2006.01); **C23F 4/00** (2006.01); **C30B 33/12** (2006.01); **H01L 21/28** (2006.01); **H01L 21/302** (2006.01); **H01L 21/3065** (2006.01); **H01L 21/311** (2006.01); **H01L 21/60** (2006.01); **H01L 21/768** (2006.01); **H01L 21/8234** (2006.01); **H01L 23/522** (2006.01)

CPC (source: EP KR US)  
**H01L 21/28** (2013.01 - KR); **H01L 21/31116** (2013.01 - EP US); **H01L 21/76802** (2013.01 - EP US); **H01L 21/76829** (2013.01 - EP US); **H01L 21/76897** (2013.01 - EP US); **H01L 21/823425** (2013.01 - EP US); **H01L 2924/3011** (2013.01 - EP US); **Y10T 428/31909** (2015.04 - EP US)

Cited by  
CN102623331A

Designated contracting state (EPC)  
DE FR GB

DOCDB simple family (publication)  
**EP 0746017 A2 19961204**; **EP 0746017 A3 19990707**; EP 1557879 A2 20050727; EP 1557879 A3 20050810; EP 1608010 A2 20051221; JP H0950986 A 19970218; KR 960042975 A 19961221; MY 115808 A 20030930; US 5997757 A 19991207

DOCDB simple family (application)  
**EP 96108467 A 19960528**; EP 05007742 A 19960528; EP 05016009 A 19960528; JP 2959996 A 19960216; KR 19960018305 A 19960528; MY PI19961970 A 19960524; US 65345396 A 19960524